

Listing of the claims

Claims 1-4 (cancel)

Claim 5 (new): A method for screening a neuroactive drug compound for neural plasticity comprising the steps of:

- a) culturing at least one group of adult *Drosophila melanogaster* fruit flies using a media comprising a neuroactive drug and at least a second group of adult *Drosophila melanogaster* fruit flies using a media without a neuroactive drug;
- b) measuring one or more horizontal and vertical locomotor activities of the flies of step a);
- c) examining locomotor activity of the two groups of flies in terms of height climbed, distance walked or climbing speed wherein an alteration in one of the locomotor activities compared to the flies cultured using a media without a neuroactive compound is characteristic of effect of exposure to the neuroactive drug;
- d) maintaining the fruit flies of step a) with the media comprising the neuroactive drug for an additional time;
- e) maintaining the fruit flies of step a) fed with the media comprising the neuroactive drug with a media without a neuroactive drug;
- f) examining locomotor activity of the flies of step e) in terms of height climbed, distance walked or climbing speed wherein an alteration in one of the locomotor activities compared to the measurement of step c) is indicative of neural plasticity induced by the neuroactive drug.

Claim 6 (new). The method according to claim 5 wherein the neuroactive drug is selected from the group consisting of strychnine, pentylenetetrazol, pilocarpine hydrochloride, tetraethylammonium chloride, lithium carbonate and ethosuximide.

Claim 7 (new). The method according to claim 5 wherein step b) is carried out on day seven.

Claim 8 (new). The method according to claim 5 wherein step d) is carried out for ten days.

Claim 9 (new). The method according to step 5 wherein step e) is carried out for thirty days.